Bacteriological Finding in Chronic Suppurative Otitis Media and Antibiotic Sensitivity

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Abstract

Background: Chronic Suppurative Otitis Media(CSOM) is one of the most common infection and a major health problem in developing countries leads to serious complications if not treated properly**.**

Objective: The aim of this study is to identify the most common bacterial isolates causing CSOM in our setup to help guide the effective management of the disease. Its poor response to routine treatment and emergence of resistance strains were the factors responsible for undertaking this study

Materials and Method: Total 88 patients were included in the study with unilateral or bilateral discharge for more than 3 months at ending ear nose throat(ENT) outpatient department, AL-Hussein teaching hospital in AL-Samawa city from July 2018 to December 2018 . Samples were taken by using sterile swabs and were cultured on aerobic media and their drug susceptibility was tested by using Kirby Bauer disc diffusion method.

Results: Overall microbiology of 88 samples was studied. Pseudomonas aeruginosa (32.95%) was the most common bacterial isolate, followed by staphylococcus (30.86%), Proteus mirabilis (15%), E coli (7.95%), streptococcus pyogen (4.54%) klebsiella sp and acinoccocus sp (2.27%) enterococcus sp (3.27%).

Conclusion: Knowledge of the local bacteriological pattern and their antibiotic sensitivity is essential for the early, effective and cost saving treatment of CSOM and to prevent the complications and development of antibiotic resistance.

Keywords: *Chronic suppurative otitis media, CSOM, Antibiotic susceptibility testing.*

Introduction

Chronic superlative otitis media (CSOM) is assumed to be a complication of acute otitis media (AOM), but the risk factors for CSOM are not clear. Frequent upper respiratory tract infections and poor socioeconomic conditions (overcrowded housing and poor hygiene and nutrition) may be related to the development of chronic supportive otitis media[1] . However, a systematic review found no clear evidence that antibiotics are effective in preventing the progression of AOM to CSOM even among old age who are at high risk for the disease[2] . Chronic discharging ears are highly prevalent in the tropical regions including South Asia. Complications of chronic suppurative otitis media [3] septicemia, meningitis, brain abscess, facial paralysis and mental retardation[4] and it is believed to be responsible for more than two-third of deafness in children . Unfortunately, the management of the chronic discharging ear is still limited to daily ear dressing until a dry ear is achieved[5] and mastoidectomy

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is reserved for complications. Ear discharge had been the commonest ear problem presenting to the Ent department, over recent years. Identification of the etiological organisms not only aids in the diagnosis and improves the management of patients, but also assists in advising the patients about the modes of spread, method of prevention and anticipating the possible complications. Also, as certain etiological agents are more common in healthcare settings, the healthcare institutions can be directed regarding appropriate hygiene and sterility practice when relevant. Therefore in the present study we investigated the etiological agents (bacteria) for patients admitted with ear discharge.

Method

In this present prospective randomized study include a case series of 88 patients with clinical evidence of CSOM attending the Outpatient Department of ENT section of AL-Hussein teaching hospital Al- samawa city from July 2018 to December 2018 were studied. Patients suffering from ear discharge . Sterile swabs were used to collect pus samples. All care was taken to avoid surface contamination and the swabs were transported to microbiology section of Al-Hussein Teaching hospital. The swab was plated on 5% sheep blood agar (BA), Macconkey agar and chocolate agar (CA). The plates were incubated at 37°C for 48 h. The antimicrobial susceptibility was carried out using modified Kirby-Bauer disc diffusion technique using Mueller Hinton (MH) age.

Results

During the 5 month study period there had been 88 patients admitted for ear discharge to the ENT department for whom specimens had been sent for bacteriology and culture. Found females (52.90%) were more commonly affected than males (47.10%) and the sex ratio female: male was 1.2:1 (see figure1). The mean age was 55 years (age range from 40 to 70 years).The bacteria isolates from patients of CSOM is shown in (Table 1). Pseudomonas aeruginosa was the most common isolate followed by Staphylococcus aurous, Proteus.sp, Ecoli and Klebsiella.sp.

Table 1: Bacteria isolated from patient of CS

Isolated Bacteria	Number of Patient	%
Pseudomonas Aeruginosa	29	32.95%
Staphylococcus Aurous	27	30.86%
Proteus sp	14	15.9%
E.coli	7	7.95%
Streptococcus Pyogens	4	4.54%
Klebsiella sp	2	2.27%
Enterococcus sp	3	3.27%
Acinococcus sp	2	2.27%

Table 2: Antibiotic sensitivity pattern of Pseudomonas aeruginosa

Antimicrobial Agent	% of Sensitive Strain
1. Amikacin	85%
2. Imipenem	70%
3. Piperacillin	51%
4. Ceftazidime	47%
5. Levofloxacin	43%
6. Piperacillin + Tazobactam	39%
7. Tabromycin	32%
8. Ciprofloxacin	27%

Table 3: Antibiotic sensitivity pattern of Staphylococcus aurous

Antimicrobial Agent	% of Sensitivity
1. Amikacin	90%
2. Gentamicin	30%
3. Ampicillin	75%
4. Ciprofloxacin	65%
5. Cefalexin	54%
6. Cefotaxime	47%
7. Cefoxitin	30%
8. Vancomycin	29%

Table 4: Antibiotic sensitivity of proteus sp

Antimicrobial Agent	% of Sensitivity
1. Amkacine	93%
2. Ciprofloxacine	86%
3. Imipenem	69%
4. Pipracillin	54%
5. Ceftriaxone	43%
6 . Levofloxacin	38%
7. Pipracillin + Tazobactam	32%

Table 5:Antibiotic sensitivity of E.coli

Antimicrobial Agent	% of Sensitivity
1. Amikacine	92%
2. Ciprofloxacin	63%
3. Imipenem	93%
4. Pipracillin	58%
5. Ceftriaxone	32%
6. Levofloxacin	53%
7. Pipracillin +Tazobactam	65%

Table 6: Antibiotic sensitivity of klebsiella

Antimicrobial Agent	% of Sensitivity
1. Amikacine	73%
2. Ciprofloxaxin	52%
3. Imipenem	91%
4. Pipracillin	48%
5. Ceftriaxone	10%
6. Levofloxacin	40%
7. Pipracillin+Tazobactam	63%

Discussion

CSOM is a major health burden in developing countries . Malnutrition, overcrowding, loss substandard hygiene, frequent upper respiratory tract infections are the risk factors for developing CSOM[6] due to lack of awareness and inaccessibility to health care. URTI, LRTI, Poor hygiene, introduction of foreign body in Ear, smoking and misuse of antibiotics were found to be the major risk factors for Otitis Media according to a study[3] same was reported by Kumar etal[4] in a study from India patients in our environment tend to live with the disease and tolerate its discomfort with result consequences[7] . CSOM is an important cause of preventable hearing loss. According to the WHO survey, the global burden of illness from CSOM involves (65–330 million) individuals with draining ears, 60% of whom (39–200 million) suffer from significant hearing impairment[1]. In our study Pseudomonas aeruginosa (32.95%) was the most common isolate followed by Staphylococcus aurous(30.86%), Proteus sp (15.9%), E coli (7.95%). and Klebsiella sp(2.27%) the same some authors reported pseudomonas aeruginosa is commonest bacteria isolated from CSOM this parallel to other anthers[5,8,9] . Slight predominance of females (52.90%) over males (47.10%) was seen in our study but that finding might be incidental due to random selection of cases. This was parallel with the findings of few other authors[9] and contrast to[10,11]. Old age were found to be most affected group predominantly of age group (60-70) year followed by (50-58)year. This finding was contrast to the finding reported by few other research [9,10].In our study al-amekacine most common antibiotic affected on microorganism this finding parallel to other author in Australian.

Conclusion

In conclusion, knowledge of the responsible local pathogens in CSOM is essential for the proper management of the disease to prevent the complications associated with its persistent and emergence of resistant bacterial strain in csom.

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Ethical Clearance: Not required

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